

PATENT  
Atty. Dkt. No. WEAT/0379**REMARKS**

This is intended as a full and complete response to the Office Action dated December 13, 2005, having a shortened statutory period for response set to expire on March 13, 2006. Please reconsider the claims pending in the application for reasons discussed below.

***Claim Rejections - 35 U.S.C. § 112***

Claim 5 stands rejected under 35 U.S.C. § 112, second paragraph. Applicant has amended the claim to clarify the issues addressed by the Examiner. Accordingly, Applicant respectfully requests withdrawal of the rejection and allowance of the claim.

***Claim Rejections - 35 U.S.C. § 103***

Claims 1-27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Sakairi, et al* ("A system for measuring temperature and strain separately by BOTDR and OTDR", SPIE Vol. 4920 (2002)) in view of *Yamete, et al* (U.S. Publication No. 2003/0234921). In response, Applicant respectfully traverses the rejection.

The Examiner bears the initial burden of establishing a *prima facie* case of obviousness. See MPEP § 2142. To establish a *prima facie* case of obviousness three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one ordinary skill in the art, to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Third, the prior art reference (or references when combined) must teach or suggest all the claim limitations. See MPEP § 2143.

A system disclosed in *Sakairi* uses Raleigh scatter to resolve Brillouin frequency shift data for improved distributed temperature and strain measurements. In the introduction, *Sakairi* states "it is impossible to separate the strain and temperature by only measuring the Brillouin frequency shift." *Sakairi* therefore teaches a method based only on distributed measurements while *Yamete* teaches a method that combines a

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distributed measurement (such as the distributed measurement disclosed in *Sakairi*) with a Bragg grating to calibrate the distributed measurement. The optical channel selector in *Sakairi* is part of the distributed measurement taught therein and therefore would not be part of any modification relating to the proposed combination with *Yamate* to calibrate the distributed measurement with a Bragg grating sensor.

*Yamate* illustrates in Figure 5 a configuration for the combination distributed measurement and Bragg grating sensor that includes dedicated instruments (i.e., distributed temperature sensor optoelectronics module (reference number 60) and an optical spectral analyzer (62)) that are each shown optically coupled to a common fiber. *Yamate* is silent with respect to any type of switch. It is only the Bragg grating that provides point sensing. Furthermore, there is no indication in *Yamate* that the same light source used to provide responses from the Bragg grating is also used to perform the distributed temperature sensing. Light sources capable of performing such dual tasks were not known when the *Yamate* reference was filed.

There is no indication that modification of *Sakairi* to include a Bragg grating would incorporate the Bragg grating sensor into the system disclosed in *Sakairi* in a manner as claimed. Regarding claim 1, the same light source produces both first and second optical signals that are reflected to provide first and second reflected signals, which are respectively from a Bragg grating sensor and caused by Brillouin backscattering. With respect to claim 12, a controller is coupled to an optical signal detection circuit for processing information provided by both first and second sensing branches, which are respectively for detecting at a Bragg grating and for sensing along the optical fiber from backscattered signals. In claim 21, a switch diverts returning signals to branches having either a wavemeter for resolving a wavelength of signals reflected from a Bragg grating sensor or a frequency detector for resolving a difference in frequency between a pulsed signal and a backscattered signal. With regard to claim 25, a point sensing circuit and a distributed sensing circuit are disposed within a single interrogator.

Based on the foregoing, *Sakairi* in view of *Yamate* fails to teach, show or suggest each and every element of claim 1, 12, 21 or 25. Applicant submits that these claims

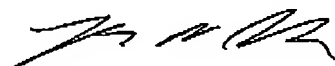
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and all claims dependent thereon are allowable. Accordingly, Applicant respectfully requests withdrawal of the rejection and allowance of the claims.

### ***Conclusion***

The references cited by the Examiner, alone or in combination, do not teach, show, or suggest the invention as claimed. Having addressed all issues set out in the office action, Applicant respectfully submits that the claims are in condition for allowance and respectfully requests that the claims be allowed.

Respectfully submitted,



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